EXHIBIT 2

Trials@uspto.gov
571-272-7822

Paper 9
Entered: May 8, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG DISPLAY CO., LTD. and DELL INC.,
Petitioner,

v.

SOLAS OLED, LTD.,
Patent Owner.

IPR2020-00140
Patent 6,072,450

Before SALLY C. MEDLEY, JESSICA C. KAISER, and JULIA HEANEY, *Administrative Patent Judges*.

HEANEY, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes Review*
35 U.S.C. § 314

I. INTRODUCTION

Samsung Display Co., Ltd. and Dell Inc. ("Petitioner") filed a Petition to institute an *inter partes* review of claims 1–9, 11–13, and 15–18 of U.S. Patent No. 6,072,450 (Ex. 1001, "the '450 patent"). Paper 1 ("Petition" or "Pet."). Solas OLED Limited ("Patent Owner") filed a Preliminary Response. Paper 7 ("Prelim. Resp.").

Institution of an *inter partes* review is authorized by statute when "the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a) (2018). Upon consideration of the Petition, the Preliminary Response, and the evidence of record, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of at least one claim challenged in the Petition. Accordingly, we institute an *inter partes* review of all claims and all grounds asserted in the Petition.[1]

A. Related Proceedings

The parties identify the following litigation involving the '450 patent: *Solas OLED Ltd. v. Samsung Display Co., Ltd., et al.*, Case No. 2:19-cv-00152-JRG (E.D. Tex.); *Solas OLED Ltd. v. Dell Technologies Inc.*,6:19-cv-00514-ADA (W.D. Tex.); *Solas OLED Ltd. v. Google Inc.*, 6:19-cv-00515-ADA (W.D. Tex.); and *Solas OLED Ltd. v. Apple Inc.*, 6:19-cv-00537-ADA (W.D. Tex.). Pet. 4; Paper 5, 1.

[1] *Guidance on the Impact of SAS on AIA Trial Proceedings* (Apr. 26, 2018), https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial; *see also SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

B. The ’450 Patent

The ’450 patent, titled “Display Apparatus,” describes a passive matrix type electroluminescent (“EL”) display apparatus including parallel cathode lines, parallel anode lines perpendicular to the anode lines, and an organic electroluminescent layer between the cathode lines and anode lines. Ex. 1001, [54], 1:6–7, 1:14–20. Applying a positive voltage to the cathode lines drives the organic electroluminescent layer, and the display apparatus displays an image corresponding to the applied voltage. *Id.* at 1:20–24. The ’450 patent explains that the organic electroluminescent layer “can emit light at a high instantaneous luminance by applying a high voltage to the organic EL layer” but, due to this, “the organic EL layer can easily deteriorate.” *Id.* at 1:38–41. The ’450 patent further explains that with larger numbers of anode lines and cathode lines, the greater the possibility of crosstalk in a passive matrix type electroluminescent display apparatus, which makes it difficult to display a highly precise image. *Id.* at 1:42–46.

The ’450 patent describes a conventional active matrix type display apparatus to address the above problems. *Id.* at 1:47–49. The display apparatus is depicted in Figure 22 of the ’450 patent, reproduced below.

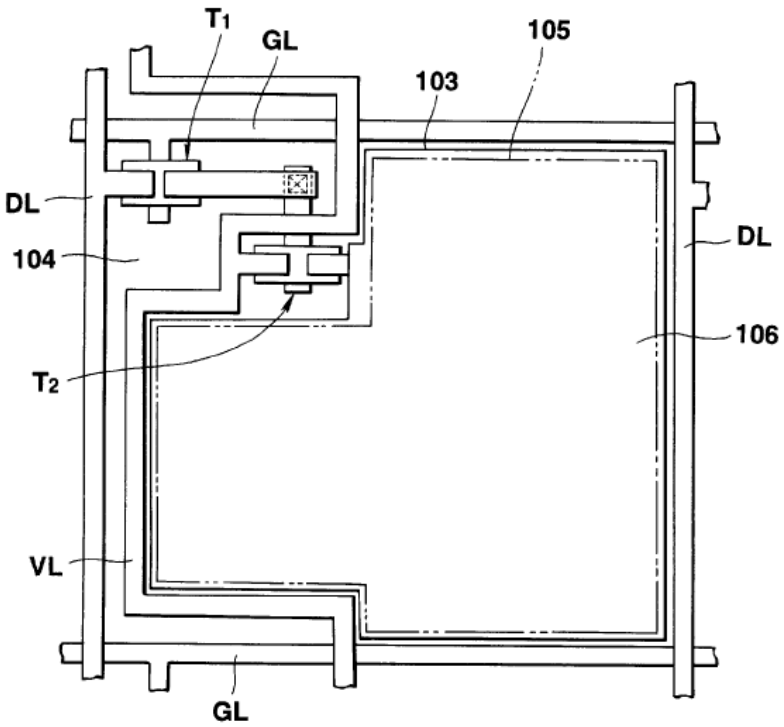


FIG.22

Figure 22 "is a plan view of a display apparatus according to the related art." *Id.* at 5:12–13. The display apparatus includes pairs of thin film transistors that include a selection transistor T1 and a drive transistor T2 and confer a voltage storing capability on pixels. *Id.* at 1:49–51. The '450 patent states that transistors T1, T2 can be thin film transistors. *Id.* at 1:58–59.

The display apparatus further includes an organic EL layer 106 that is arranged to not overlap transistors T1 and T2 so that light emitted by the EL layer 106 is prevented from entering thin film transistors T1, T2. *Id.* at 2:23–27. The '450 patent explains that "[i]f the emitted light entered the thin film transistors T1 and T2, unnecessary photoelectromotive force would be generated in the channel regions of the thin film transistors T1 and T2, which entails the possibility of the thin film transistors T1 and T2 malfunctioning." *Id.* at 2:27–32.

An object of the ’450 patent is “to provide a display apparatus which has a light emitting area enlarged so as to emit light at a satisfactorily high luminescence even though a voltage applied to an EL layer is low, and which has a long luminance life.” *Id.* at 2:66–3:3. Another object of the ’450 patent is “to provide a display apparatus which prevents light from entering active elements such as transistors, to thereby avoid the malfunction of the active elements.” *Id.* at 3:4–7. An embodiment of such a display apparatus is shown in Figure 1, which is reproduced below.

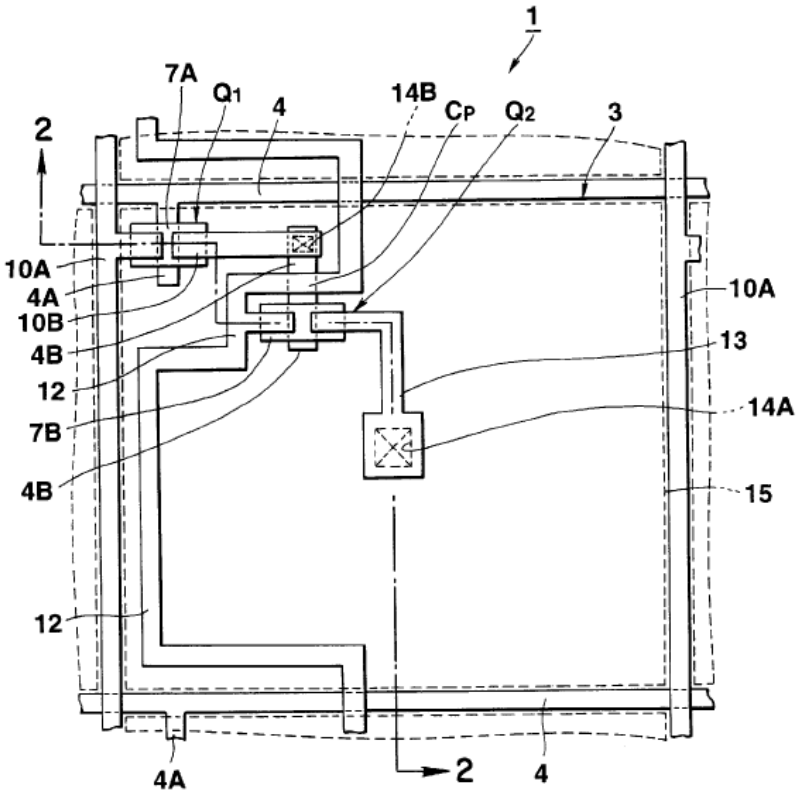


FIG.1

Figure 1 “is a plan view of an [sic] display apparatus according to one embodiment of the present invention.” *Id.* at 4:28–29.

The ’450 patent states that display apparatus 1 includes “a substrate 2, an n-channel transistor Q1, an n-channel transistor Q2, [and] an organic EL element 3.” *Id.* at 5:25–33. According to the ’450 patent, “[i]n the entire display area, an organic EL layer 16 is formed on the cathode electrodes 15 and the interlayer insulation film 14, and a transparent anode electrode 17.” *Id.* at 6:39–41. The ’450 patent further explains that “each EL element 3 emits light over the entirety of one pixel area” and “cathode electrodes 15 are formed of MgIn which reflects light.” *Id.* at 7:66–8:47, 8:49–50. Thus, “light emitted by the organic EL layer 16 when a voltage is applied between the anode electrode 17 and the cathode electrodes 15 comes out through the anode electrode 17 without leaking downward” and “the light does not enter the selection transistors Q1 and the drive transistors Q2, and hence the malfunction of the transistors Q1 and Q2 due to the photoelectromotive force is avoided.” *Id.* at 8:50–57.

In addition, the ‘450 patent describes wavelength conversion layers having the photoluminescence effect of absorbing light of one wavelength from an organic electroluminescence layer and emitting light of a different wavelength. *Id.* at 11:47–65. As a result, a “display apparatus 1 can easily display a full-color image.” *Id.* at 12:8–9. The ’450 patent also describes color filter layers that allow light of only a certain wavelength range to pass through. *Id.* at 12:28–48. In one embodiment, a color filter absorbs a wavelength range of light that a corresponding wavelength conversion layer is excited by so the wavelength conversion layer is not excited by light coming from outside of the display apparatus. *Id.* at 12:49–13:10. The ’450 patent explains that with such an arrangement of wavelength range

conversion layers and color filter layers, "the color purity of light going outside the display apparatus 1 is high." *Id.* at 13:17–18.

C. The Challenged Claims

Petitioner challenges claims 1–9, 11–13, and 15–18 of the '450 patent. Pet. 1. Claims 2–9, 11–13, 17, and 18 depend from claim 1, and claim 16 depends from claim 15. Claim 1, reproduced below, is illustrative of the subject matter of the challenged claims:

> 1. A display apparatus comprising:
>
> a substrate;
>
> active elements formed over said substrate and driven by an externally supplied signal;
>
> an insulation film formed over said substrate so as to cover said active elements, said insulation having at least one contact hole;
>
> at least one first electrode formed on said insulation film so as to cover said active elements, and connected to said active elements through said at least one contact hole, said at least one first electrode being made of a material which shields visible light;
>
> an organic electroluminescent layer having an organic electroluminescent material formed on said at least one first electrode so as to cover said active elements and including at least one layer which emits light in accordance with a voltage applied to said at least one layer; and
>
> at least one second electrode formed on said organic electroluminescent layer which covers said active elements.

Ex. 1001, 17:49–18:3.

D. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Challenged Claim(s)	35 U.S.C.[2]	Reference(s)/Basis
1, 2, 4–8, 15, and 16	§ 102(e)	Utsugi[3]
1, 2, 4–8, 15, and 16	§ 103(a)	Utsugi
3	§ 103(a)	Utsugi and Manabe[4]
9, 11–13, 17, and 18	§ 103(a)	Utsugi and Eida[5]

Pet. 5. Petitioner relies on the Declaration of Adam Fontecchio, Ph.D. (Ex. 1007) ("Fontecchio Declaration").

II. ANALYSIS

A. Claim Construction

Petitioner argues a construction for the term "active elements." Pet. 13–14. Specifically, Petitioner asserts "[i]n electronics, 'active elements' generally are understood to be elements that supply energy to a circuit, for instance, by controlling the flowing of current." *Id.* at 13 (citing Ex. 1007 ¶ 57). Petitioner argues the '450 patent does not expressly define the term but "it is clear that the '450 patent considers transistors to be 'active elements.'" *Id.* at 13–14 (citing Ex. 1001, 3:4–7, claims. 4 and 7; Ex. 1007 ¶¶ 57–58). In view of this, Petitioner contends "'active elements' should be interpreted to encompass transistors (at a minimum)." *Id.* at 14.

---

[2] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. Because the '450 patent issued from an application filed before March 16, 2013, we apply the pre-AIA versions of the statutory bases for unpatentability.

[3] US Patent No. 5,670,792 to Utsugi et al., issued Sept. 23, 1997 (Ex. 1003).

[4] JP H05-3079 to Manabe et al. Citations to Manabe reference Petitioner's certified translation of Manabe (Ex. 1004), unless stated otherwise. A Japanese language copy of Manabe was provided as Exhibit 1009.

[5] WO 96/25020 to Eida et al. Citations to Eida reference Petitioner's certified translation of Eida (Ex. 1005), unless stated otherwise. A Japanese language copy of Eida was provided as Exhibit 1010.

Patent Owner does not propose that the Board explicitly construe any claim terms. *See* Prelim. Resp. We determine we need not explicitly construe any claim terms at this stage of the proceeding. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

B. Level of Ordinary Skill in the Art

Factors pertinent to a determination of the level of ordinary skill in the art include "(1) educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of workers active in the field." *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–697 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case. *Id.*

Petitioner argues a person of ordinary skill in the art at the time of the invention "would have had a relevant technical degree in Electrical Engineering, Computer Engineering, Materials Science, Physics, or the like, and experience in active matrix display design and electroluminescence." Pet. 13 (citing Ex. 1007 ¶ 54). Patent Owner does not dispute the level of ordinary skill in the art. For purposes of this decision, we adopt Petitioner's definition of the level of ordinary skill in the art because it is consistent with the '450 patent and the asserted prior art.

C. Principles of Law

"Anticipation requires that every limitation of the claim in issue be disclosed, either expressly or under principles of inherency, in a single prior art reference," *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1255–56 (Fed. Cir. 1989), and that the claim limitations be "arranged or combined in the same way as recited in the claim[]," *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). However, "the reference need not satisfy an *ipsissimis verbis* test." *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009).

A claim is unpatentable under 35 U.S.C. § 103 if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when available, evidence such as commercial success, long felt but unsolved needs, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *see KSR*, 550 U.S. at 407 ("While the sequence of these questions might be reordered in any particular case, the [Graham] factors continue to define the inquiry that controls.").

The Supreme Court made clear that we apply "an expansive and flexible approach" to the question of obviousness. *KSR*, 550 U.S. at 415. Whether a patent claiming the combination of prior art elements would have

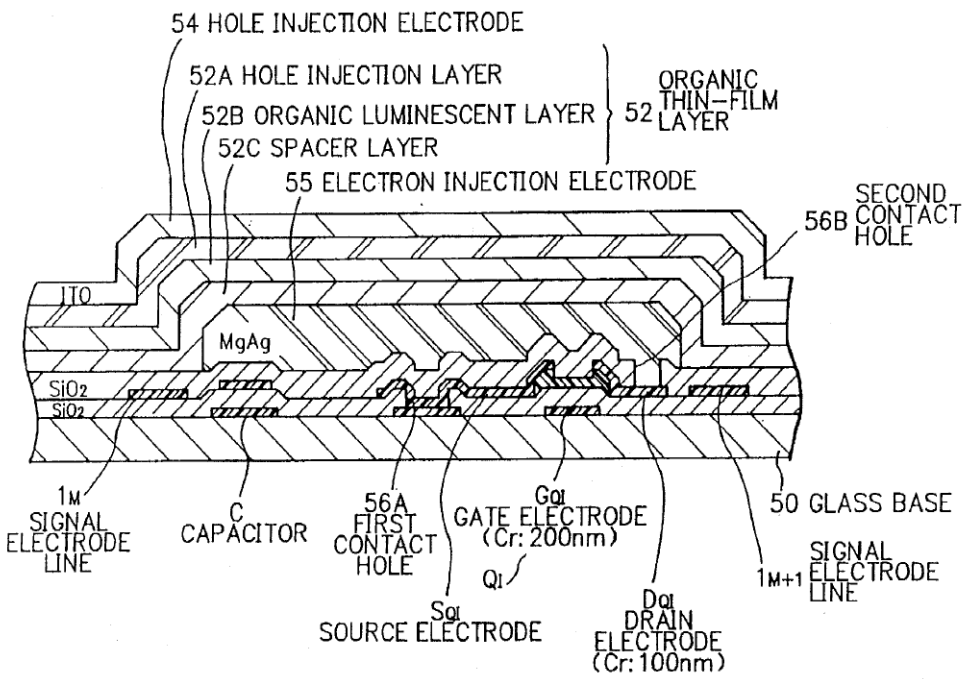
been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id*. at 417. Reaching this conclusion, however, requires more than merely showing that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc*., 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness additionally requires that a person of ordinary skill at the time of the invention "would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention." *Id*.

D. Overview of the Asserted References

1. Utsugi (Ex. 1003)

Utsugi is titled "Current-Controlled Luminous Element Array and Method for Producing the Same" and relates "to a current-controlled luminous element array of an active matrix type such as for a display purpose, having multiple current-controlled luminous elements arranged in a matrix form." Ex. 1003 at [54], 1:8–11. Utsugi's Figure 5 is reproduced below.

FIG. 5



Utsugi's Figure 5 is a sectional view of an internal structure of a picture element, according to an embodiment of Utsugi. *Id*. at 5:39–41. The picture element includes a luminescent element EL that "includes an organic thin-film layer 52 of a three-layered structure having a spacer layer 52C, an organic luminescent layer 528 and a hole injection layer 52A laminated in this order over a glass base 50." *Id.* at 6:37–41. Utsugi's device further includes electron injection electrode 55. *Id.* at 6:47–54.

Utsugi describes "[t]he luminescent element EL as a layered organic thin-film EL element extends over the capacitor C and the transistors Q_I and Q_S, covering substantially the entirety of the picture element region." *Id.* at 6:23–27.

2. Manabe (Ex. 1004)

Manabe is titled "Organic EL Element." Ex. 1004 at [54]. Manabe's Figure 1 is reproduced below.

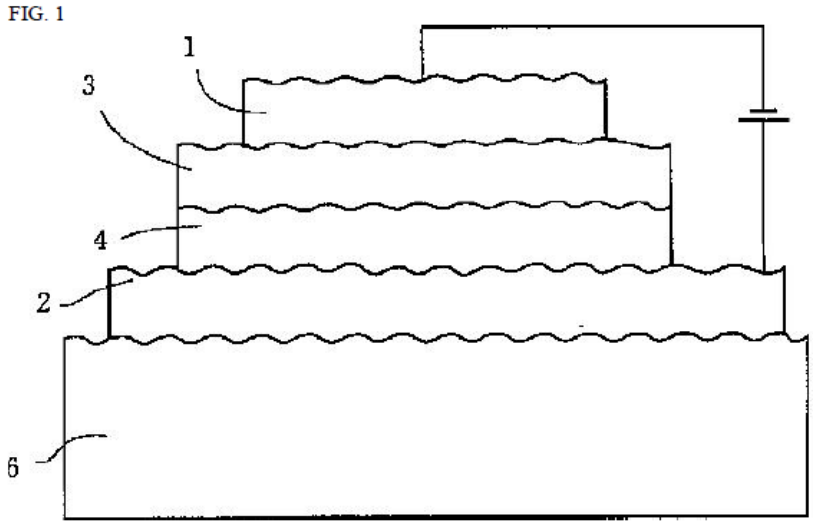


Figure 1 "is a drawing showing an embodiment applying the present invention to an organic EL element with a two-layer structure." *Id.* ¶ 34. Manabe describes an organic electroluminescent element that includes transparent electrode 2 and hole transport layer 4 that make up an organic electroluminescent layer, light emitting layer 3, and metal electrode 1 "formed in order on the rough surface of a glass substrate 6." *Id.* ¶ 26.

Manabe's Figure 5 is reproduced below.

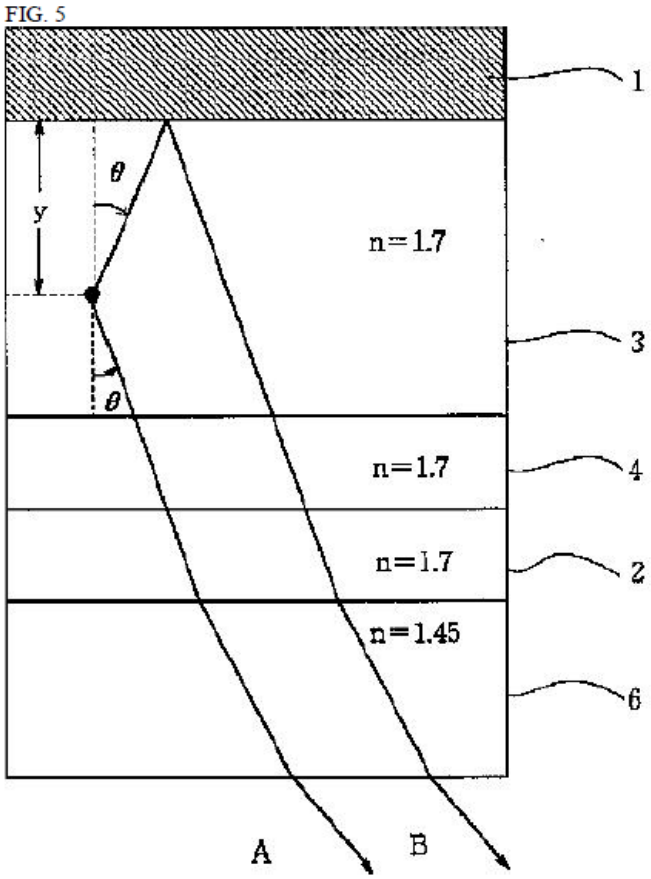


Figure 5 "is a partial enlarged cross-section drawing describing light interference of an organic EL element with a two-layer structure." *Id.* ¶ 34.

Manabe explains:

> Light emitted from one point of emission source P within the EL layer includes light from two sources, path A of light directly impinging on the substrate 6 in the drawings and path B of light reflecting off the metal electrode 1 and impinging on the substrate 6. The light from these two paths have light path difference L given by equation 1 and furthermore phase difference ηy given by equation 2 and mutually interfere.

Id. ¶ 7. In view of this, Manabe describes:

> roughening of the surface of the organic EL layer in contact with the metal electrode or the surface of the metal electrode in contact with the organic EL layer causes slight differences in the light path from light sources within the light emission layer

> causing averaging of the interference effect and reducing angle dependence and film thickness dependence.

Id. ¶ 24.

In addition, Manabe states:

> In this manner, the interface of each layer is roughened to a degree as described above. As a result, there are different optical path variations from each of the light emitting points in the light emitting layer when seen from certain visual angles and is not constant. Therefore, interference effect is averaged, and changes in visual angle dependence in luminance and the light emitting spectrum and variation in membrane thickness are suppressed.

Id. ¶ 31.

3. Eida (Ex. 1005)

Eida is titled "Multi-Color Light Emission Apparatus and Method for Production Thereof" and "relates to a multi-color light emission apparatus suitable for use in multi-color or full-color thin-type displays and a method for producing the multi-color light emission apparatus." Ex. 1005 at [54], 1:6–8.

Eida's Figure 5 is reproduced below.

FIG. 5

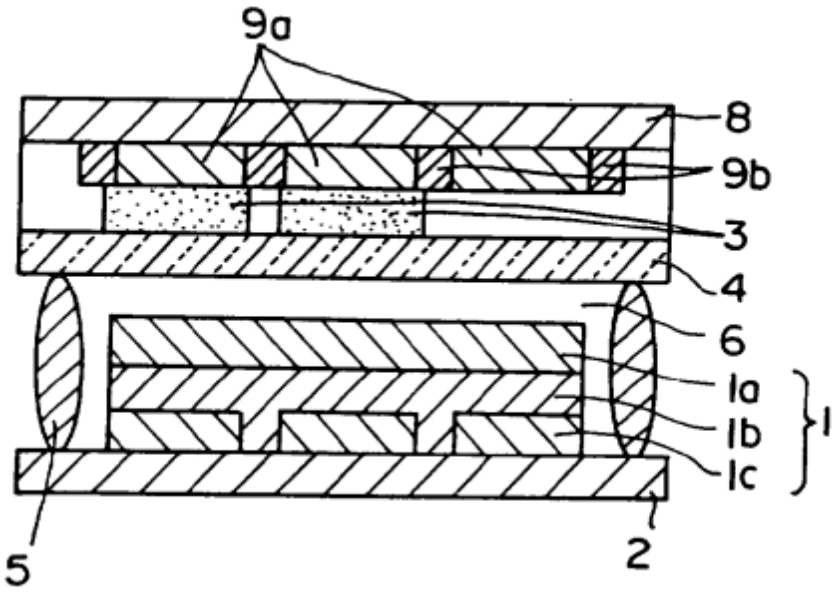


Figure 5 "is a schematic cross section that schematically shows the multi-color light emission apparatus (first invention) of the present invention with an example using a color filter and a black matrix." *Id.* at 8:1–3. Eida describes a multi-color light emissions apparatus that includes support substrate 2, organic electroluminescent element 1, transparent inorganic oxide substrate 4, fluorescent layers 3, and transparent substrate 8. *Id.* at 9:22–24, 9:28–10:5.

According to Eida, "a fluorescent layer should convert the light emitted from an organic EL element into light of a wave length longer than that of the light emitted from the organic EL element" and fluorescent layers 3 "emit rays of fluorescent light of different colors are separately arranged on the same plane to obtain emitted light of the three primary colors (RGB)." *Id.* at 9:24–26, 10:12–13. Eida states "[t]he installation of the fluorescent layer has the advantage that multi-color light emission which is higher in efficiency than in the case of installing a color filter can be

anticipated." *Id.* at 3:8–9. Eida further describes that "a color filter 9a may be arranged on each of the fluorescent layers 3 to control the fluorescent colors and thereby to promote the color purity." *Id.* at 10:15–16.

Eida depicts another embodiment in Figure 13, reproduced below.

FIG. 13

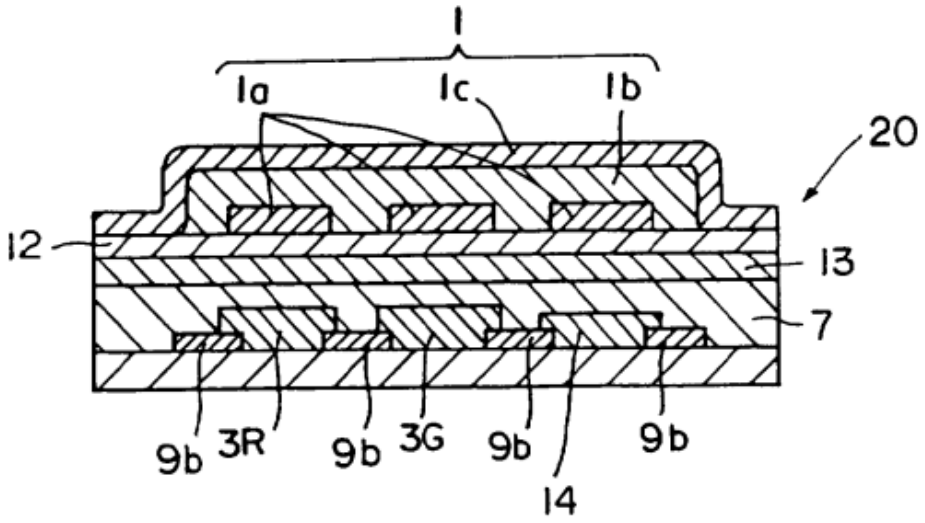


Figure 13 "is a schematic cross section that schematically shows the multi-color light emission apparatus (second invention) of the present invention showing another embodiment that uses a transparent adhesive, transparent fluorescent layer protective layer, color filter, and a black matrix." *Id.* at 8:31–9:2. The multi-color light emission apparatus includes a transparent support substrate (not labeled in Figure 13), red color conversion fluorescent layer 3R, green color conversion fluorescent layer 3G, blue color filter 14, transparent and electrically insulating inorganic oxide layer 12, and organic electroluminescent element 1. *Id.* at 37:11–38:2, 38:10–12.

Eida explains that blue color filter 14 adjusts "the colors of light emitted from the organic EL element to improve the purity of these colors."

Id. at 38:10–12. Eida further explains that, in addition to the above structures, "a red color filter and a green color filter may be arranged between the red color conversion fluorescent layer 3R and the transparent substrate, and between the green color conversion fluorescent layer 3G and the transparent substrate respectively, thereby adjusting colors of light of a red color and of a green color to improve purity of these colors." *Id.* at 38:4–8.

E. Alleged Anticipation Based on Utsugi

Petitioner argues that claims 1, 2, 4–8, 15, and 16 are anticipated by Utsugi. Pet. 22–53. We have reviewed the information provided by Petitioner, including the relevant portions of the Fontecchio Declaration (Ex. 1007), and are persuaded, based on the current record, that Petitioner has demonstrated a reasonable likelihood of prevailing on this anticipation challenge.

For example, claim 1 recites "a substrate." Ex. 1001, 17:50. Petitioner contends that Utsugi discloses this limitation because "glass base 50" is a substrate upon which the EL element is built. Pet. 22 (citing Ex. 1003, 6:37–40; Ex. 1007 ¶ 75).

Claim 1 further recites "active elements formed over said substrate and driven by an externally supplied signal." Ex. 1001, 17:51–52. Petitioner contends that Utsugi discloses this limitation because current-controlling transistor Q_I and switching transistor Q_S, are active elements and are formed on top of glass base 50. Pet. 22–23 (citing Ex. 1003, 6:19–23, 7:20–45, Fig. 5; Ex. 1007 ¶¶ 77–78). Petitioner also contends that switching transistor Q_S is driven by the external signal from scan electrode line 3_{N+1}, while current-controlling transistor Q_I is driven by the external signal from

the signal electrode line 1_M. *Id.* at 23 (citing Ex. 1003, 7:9–12, 8:11–16, Fig. 3; Ex. 1007 ¶ 79).

Claim 1 further recites "an insulation film formed over said substrate so as to cover said active elements, said insulation having at least one contact hole." Ex. 1001, 17:53–55. Petitioner contends that Utsugi discloses this limitation because a SiO_2 layer is formed over glass base 50 with contact holes 56B, so as to cover transistors Q_S and Q_I, and a person of ordinary skill in the art would understand that SiO_2 is an insulating material. Pet. 24 (citing Ex. 1003, 7:20–45, 46–51; Ex. 1007 ¶ 82). Petitioner further contends that Utsugi Figure 5 shows the SiO_2 layer as being continuous (apart from the second contact hole 56B) and describes the pixel electrode as covering the majority of the pixel, including both transistors, which means that the SiO_2 layer must cover both transistors in order to prevent shorting of the source and drain electrodes of the transistors and electron injection electrode 55. *Id.* at 25 (citing Ex. 1003, 7:47–52, Fig. 4; Ex. 1007 ¶ 84).

Claim 1 further recites "at least one first electrode formed on said insulation film so as to cover said active elements, and connected to said active elements through said at least one contact hole, said at least one first electrode being made of a material which shields visible light." Ex. 1001, 17:56–61. Petitioner contends that Utsugi discloses this limitation because electron injection electrode 55 is formed as a MgAg layer on the SiO_2 layer, as shown in Figure 5. Pet. 26 (citing Ex. 1003, 7:47–57; Ex. 1007 ¶ 86). Petitioner further contends that electron injection electrode is connected to transistors Q_S and Q_I through contact hole 56B, as shown in Figure 5 and described in Utsugi's manufacturing steps. *Id.* at 27 (citing Ex. 1003, 7:46–51; Ex. 1007 ¶ 88). Petitioner also contends that MgAg, a metallic material,

would be reflective and shield visible light from the transistors. *Id.* at 28 (citing Ex. 1003, 6:47–50; Ex. 1007 ¶ 89). Petitioner further relies on the '450 patent's identification of magnesium-based metals such as MgAg and MgIn as suitable materials for forming the first electrode. *Id.* (citing Ex. 1001, 8:49–54, 17:26–28).

Claim 1 further recites "an organic electroluminescent layer having an organic electroluminescent material formed on said at least one first electrode so as to cover said active elements and including at least one layer which emits light in accordance with a voltage applied to said at least one layer." Ex. 1001, 17:62–67. Petitioner contends that Utsugi discloses this limitation because organic thin-film layer 52 includes at least one layer (52B) which emits light in accordance with a voltage applied to the layer. Pet. 28 (citing Ex. 1003, 6:59–63, 8:20–28, Fig. 5; Ex. 1007 ¶ 92). Petitioner further contends that Utsugi discloses that the EL structure, including organic thin-film layer 52, extends over the capacitor C and transistors Q_S and Q_I, covering the entire picture element region. *Id.* at 29 (citing Ex. 1003, 6:23–29, 6:53–59; Ex. 1007 ¶ 93).

Claim 1 further recites "at least one second electrode formed on said organic electroluminescent layer which covers said active elements." Ex. 1001, 18:1–3. Petitioner contends that Utsugi discloses this limitation because hole injection electrode 54 is formed on organic thin-film layer 52, so as to cover the entire picture element region, including transistors Q_S and Q_I. Pet. 30–31 (citing Ex. 1003, 6:23–29, 6:53–59, Fig. 5; Ex. 1007 ¶ 95–96).

We have reviewed Petitioner's evidence and argument, and find that Petitioner has sufficiently shown Utsugi discloses each of these limitations at this stage of the proceeding.

Patent Owner argues Utsugi does not disclose several of the limitations of claim 1: (1) "an insulation film formed over said substrate so as to cover said active elements"; (2) an electrode made of "a material which sheds visible light"; and (3) a "layer which emits light in accordance with a voltage applied to said at least one layer." Prelim. Resp. 3–10. At this stage of the proceeding and based on the current record, we are not persuaded by any of these arguments. For example, Patent Owner argues that Utsugi does not disclose an "insulation film" because there is no evidence supporting Petitioner's assertion that SiO_2 is insulating, or that it insulates as used in Utsugi's SiO_2 layer. *Id.* at 5–6. Patent Owner further argues that Petitioner cites no evidence or explanation of why Dr. Fontecchio believes the SiO_2 layer is a "film." *Id.* We are not persuaded by these arguments because they do not consider Utsugi's entire disclosure, as it would have been understood by a person of ordinary skill in the art. Further, Patent Owner's contention that Petitioner's expert declaration is conclusory as to its explanation of the understanding of a person of ordinary skill in the art, is itself unsupported attorney argument. We also note that Dr. Fontecchio's testimony is currently uncontroverted by other evidence, and Patent Owner will have a chance to present contrary evidence during the trial.

Patent Owner's argument that Utsugi does not disclose that its MgAg electrode shields visible light attacks Petitioner's reliance on the '450 patent specification, which describes forming cathode electrode 15 using "an Mg material doped with Ag." Prelim. Resp. 7; Ex. 1001, 17:26–28. Patent

Owner argues that "an Mg material doped with Ag" is not the same as MgAg. Prelim. Resp. 7. Patent Owner also argues "the use of transparent indium tin oxide in the '450 patent shows [that] combining opaque or reflective materials such as tin with other materials can yield a layer with different optical properties than the component materials." *Id.* (citing Ex. 1001, 6:41–42). We are not persuaded by Patent Owner's arguments because they are unsupported attorney argument, and lack explanation as to why a person of ordinary skill in the art would have considered the '450 patent's teaching of indium tin oxide as a transparent anode electrode as bearing on the selection of materials for the reflective cathode electrode. We also find Petitioner's contentions about MgAg in Utsugi sufficiently persuasive at this stage of the proceeding in light of the '450 patent's disclosure of "an Mg material doped with Ag." Again, Patent Owner will have a chance to present contrary evidence during the trial.

We are also unpersuaded by Patent Owner's argument that Petitioner fails to show that Utsugi's EL layer emits light in accordance with an applied voltage, because the Petition and Dr. Fontecchio's declaration do not point "to any specific voltage disclosed in Utsugi" and "the portion of Utsugi quoted in the petition and expert declaration in connection with this limitation describe an 'electric field' and an 'electric current,' but never mention a 'voltage.'" Prelim. Resp. 3–4. This argument is unpersuasive because it does not consider Utsugi's entire disclosure, which describes an electric current that runs through an established conducting route including the EL layer (Ex. 1003, 8:20–28), and that the EL layer luminesces when "there develops an electric field acting thereon" (Ex. 1003, 6:59–63). We are not persuaded by Patent Owner's unsupported attorney argument that

does not address how a person of ordinary skill in the art would have understood Utsugi's disclosure as to the operation of its EL layer, even without an express mention of "voltage." We find Petitioner's contentions as to Utsugi's disclosures sufficient at this stage of the proceeding.

Conclusion as to Claim 1

Based on the current record, we are persuaded that Petitioner's analysis of Utsugi's teachings, as supported by Dr. Fontecchio's testimony, is sufficient to establish a reasonable likelihood that claim 1 is anticipated by Utsugi.

Claims 2, 4–8, 15, and 16

Petitioner relies on the same analysis for the similar limitations of independent claim 15 and provides further analysis detailing where it contends additional limitations of claim 15, as well as each additional limitation of claims 2, 4–8, 15, and 16, are disclosed in Utsugi. Pet. 31–53. We have reviewed Petitioner's evidence and argument, and find that Petitioner has sufficiently shown Utsugi teaches each of these limitations at this stage of the proceeding. Patent Owner does not offer any additional argument with respect to the portions of Utsugi that purportedly disclose the limitations of claim 15, or these dependent claims. Accordingly, for the reasons discussed above, we determine Petitioner has shown a reasonable likelihood of prevailing with respect to it challenge to claims 2, 4–8, 15, and 16 as anticipated by Utsugi.

F. Alleged Obviousness Based on Utsugi

Petitioner argues that to the extent there is any question whether Utsugi anticipates claims 1, 2, 4–8, 15, and 16, those claims would have been obvious over Utsugi. Pet. 53–62. Specifically, Petitioner argues that

even if Utsugi does not disclose the claim limitation "an insulation film formed over said substrate so as to cover said active elements," it would have been obvious to a person of ordinary skill in the art to form the insulation film so as to cover the active elements, because Utsugi discloses that electron injection electrode 55 covers both transistors Q_S and Q_I, and a person of ordinary skill would have understood that it would be necessary to include an insulation layer over both transistors in order to prevent their metal layers from coming into contact with the electron injection electrode. *Id.* at 54–55 (citing Ex. 1007 ¶¶ 168–169). Petitioner argues that including an insulation layer over both transistors would have been predictable and nothing more than applying a known technique to a known device, as evidenced by the '450 patent's teaching that related art at the time of the invention made use of a passivation film that covered both transistors. *Id.* at 55 (citing Ex. 1007 ¶ 169). Petitioner relies on the '450 patent's description of the related art in Figures 22 and 23, which states that the thickness of passivation film 104 is set at such a value to "prevent the occurrence of a parasitic capacitance in the thin film transistors." *Id.* (citing Ex. 1001, 2:53–56).

Patent Owner argues that Petitioner's discussion and declaration in support of its obviousness challenge are conclusory, and should be rejected for the same reasons as discussed above for Petitioner's anticipation challenge. Prelim. Resp. 8–10.

Based on the current record, we are persuaded that Petitioner's analysis of Utsugi's teachings, as supported by Dr. Fontecchio's testimony, is sufficient to establish a reasonable likelihood that claim 1 would have been obvious over Utsugi. We have also reviewed the evidence and

arguments presented by Petitioner with regard to claim 15 and the dependent claims and are persuaded, based on the current record, that Petitioner has demonstrated a reasonable likelihood of prevailing on these obviousness challenges. Patent Owner does not present any arguments as to these claims at this stage of the proceeding. *See* Prelim. Resp.

G. Alleged Obviousness Based on Utsugi and Manabe

Petitioner argues claim 3 would have been obvious over the combined teachings of Utsugi and Manabe. Pet. 62–67. Claim 3 depends from claim 1 and additionally recites "wherein said at least one first electrode has a rough surface which is in contact with said organic electroluminescent layer." Ex. 1001, 18:7–9.

We have reviewed the information provided by Petitioner, including the relevant portions of the supporting Fontecchio Declaration, and are persuaded, based on the current record, that Petitioner has established a reasonable likelihood of prevailing on this obviousness challenge. Patent Owner does not present any argument with respect to claim 3.

H. Alleged Obviousness Based on Utsugi and Eida

Petitioner argues claims 9, 11–13, 17, and 18 would have been obvious over the combined teachings of Utsugi and Eida. Pet. 67–82. Claims 9, 11–13, 17, and 18 depend from claim 1 and recite additional limitations of "wavelength conversion layers" for absorbing light emitted from the organic electroluminescent layer and "filters" for selectively permitting light rays in a wavelength range to pass. Ex. 1001, 18:53–58, 62–67, 19:1–13, 20:23–35. Patent Owner does not offer any argument as to these claims at this stage of the proceeding.

We have reviewed the information provided by Petitioner, including the relevant portions of the supporting Fontecchio Declaration, and are persuaded, based on the current record, that Petitioner has established a reasonable likelihood of prevailing on this obviousness challenge.

III. CONCLUSION

Based on the arguments in the Petition and the evidence of record, we determine that Petitioner has established a reasonable likelihood of prevailing in showing that claims 1–9, 11–13, and 15–18 of the '450 patent are unpatentable.

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that an *inter partes* review of all challenged claims of the '450 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(a), *inter partes* review of the '450 patent is hereby instituted commencing on the entry date of this Decision, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

IPR2020-00140
Patent 6,072,450

PETITIONER:

David Garr
Grant Johnson
Peter Chen
COVINGTON & BURLING LLP
dgarr@cov.com
gjohnson@cov.com
pchen@cov.com

PATENT OWNER:

Neil Rubin
Kent Shum
Reza Mirzaie
RUSS AUGUST & KABAT
nrubin@raklaw.com
kshum@raklaw.com
rmirzaie@raklaw.com